

Atlantic Ocean Floor Topography Lab.

INTRODUCTION:

Suppose you took a trip across the Atlantic Ocean and were able to check the depth of the water under your boat at regular intervals. The data table shows a record of the depth of the Atlantic Ocean measured by a research vessel travelling on course due East along 39°N latitude. Let's turn these numbers into a graphic profile of the Atlantic.

MATERIALS:

graph paper
pencil or pen
colored pencils/pens

PROCEDURES:

Use a piece of your graph paper to plot a simple line graph using the data table. Plot "OCEAN DEPTH in Meters" on the vertical axis, starting with Sea Level (zero meters depth) at the top of your graph. Plot "DISTANCE from North America in Kilometers" on the horizontal axis. Suggestion: turn your graph paper sideways and plot your graph horizontally.

DATA:

Distance from N. America (km)	Depth (m)
0	0
160	165
200	1800
500	3500
800	4600
1050	5450
1450	5100
1800	5300
2000	5600
2300	4750
2400	3500
2600	3100
3000	4300
3200	3900
3450	3400
3550	2100
3600	1330
3700	1275
3950	1000
4000	0
4100	1300
4350	3650
4500	5100
5000	5000
5300	4200
5450	1800
5500	920
5600	180
5650	0

ANALYSIS:

1. Use your ruler to draw a horizontal line across your entire graph at 0 meters depth to indicate the surface of the Atlantic Ocean.
2. Use a dark color such as black or brown and fill-in all the area below your line graph to indicate the Earth's crust below the Atlantic Ocean.
3. Draw a second horizontal line across the entire graph at 200 meters depth to indicate the maximum depth of the Photic or Epipelagic Zone. Color water areas (not the crust) the areas on your graph between zero and 200 meters using a light green color.
4. Draw a third horizontal line across the entire graph at 2000 meters depth to indicate the maximum depth of the Mesopelagic Zone. Color the water areas (not the crust) on your graph between 200 and 2000 meters using a blue color.
5. Draw your last horizontal line across the entire graph at 6000 meters depth to indicate the maximum depth of the Abyssal or Bathypelagic Zone. Color the water areas (not the crust) on your graph between 2000 and 6000 meters using a light purple or medium blue color.
6. Using a world map for reference, label the three geographic points of land (which are at zero meters or above sea level). Remember: these data are taken on an exact eastern course along the 39°N latitude line.
7. With the help of reference books or diagrams, label the following topographic features on your graph. Remember: both sides of the ocean basin may have the same topographic features but reversed! Continental Shelf Continental Slope Continental Rise Abyssal Plains Mid-Atlantic Ridge Rift
8. Add labels and arrows to show which crustal plates are involved in creating this topographic profile and what direction they are moving.
9. Write a paragraph or two explaining the plate tectonics of the Atlantic Ocean.

EXTENDED RESEARCH:

Use a large nautical chart for another interesting area of the ocean. With the help of a ruler or large straightedge read and record the depth of the ocean and heights of islands or land masses at regular intervals, (such as every 2 miles or some other appropriate distance). Make another line graph like you did in this Lab. Label the geographic and topographic features, color it and write a short essay comparing the two profiles. Turn in a copy of your chart, numeric data, graph and analysis for credit!